

What is claimed is:

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1. A base station apparatus comprising:  
downlink transmitter to transmit a first signal to  
5 a specific mobile station apparatus and transmitting a  
second signal to another mobile station apparatus with  
directivity different from that of said first signal;  
determiner to determine whether the directivity of  
said first signal should be changed or not; and  
10 directivity controller to change the directivity  
of said first signal based on this determination result  
of the determiner.

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2. The base station apparatus according to claim 1,  
15 wherein the determiner measures a transmission power  
ratio which is the ratio of the transmission power of  
the first signal to the transmission power of the second  
signal, measures a reception power ratio which is the  
ratio of the reception power of the first signal to the  
20 reception power of the second signal, and if the  
difference between said transmission power ratio and  
said reception power ratio is greater than a  
predetermined first threshold, determines that the  
directivity of said first signal should be changed.

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3. The base station apparatus according to claim 1,  
wherein, if the difference between said reception power  
ratio and said transmission power ratio is greater than

the predetermined first threshold and at the same time  
the mobile station apparatus to which the first signal  
was sent requests the transmission power to be increased,  
the determiner determines that the directivity of said  
5 first signal should be changed.

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4. The base station apparatus according to claim 1,  
wherein, if the difference between said reception power  
ratio and said transmission power ratio is greater than  
10 the predetermined first threshold and at the same time  
the reception power of a signal transmitted from the  
mobile station apparatus to which the first signal was  
sent is smaller than a predetermined second threshold,  
the determiner determines that the directivity of said  
15 first signal should be changed.

5. The base station apparatus according to claim 1  
comprising transmission power controller to control the  
transmission power of a transmission signal, said  
20 transmission power controller does not change the  
transmission power if the determiner determines that the  
directivity should be changed.

6. The base station apparatus according to claim 1,  
25 wherein, if the determiner determines that the  
directivity should be changed, the directivity  
controller changes the directivity orientation without  
changing the width of directivity.

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7. The base station apparatus according to claim 1,  
wherein, if the determiner determines that the  
directivity should be changed, the directivity  
controller broadens the width of directivity by a certain  
amount with respect to the width of the previous  
directivity, adjusts the transmission power, changes the  
directivity orientation and returns the width of  
directivity to the original value.

8. The base station apparatus according to claim 1,  
wherein, if the determiner determines that the  
directivity should be changed, the directivity  
controller broadens the width of directivity drastically,  
changes the directivity orientation, adjusts the  
directivity orientation and then returns the width of  
directivity to the original value.

9. The base station apparatus according to claim 1,  
wherein the determiner sets a third threshold greater  
than the first threshold, and if the difference between  
the reception power ratio and said transmission power  
ratio is greater than the third threshold, determines  
that the directivity shift of the first signal is greater,  
and if the difference between the reception power ratio  
and said transmission power ratio is greater than the  
first threshold and smaller than the second threshold,  
determines that the directivity shift of said first

signal is smaller.

10. The base station apparatus according to claim 9,  
wherein, if the determiner determines that the  
5 directivity shift of the first signal is greater, the  
directivity controller broadens the width of directivity  
drastically to adjust the directivity, and if the  
determiner determines that the directivity shift of said  
first signal is smaller, does not change the width of  
10 directivity but changes the directivity orientation.

11. The base station apparatus according to claim 9,  
wherein, if the determiner determines that the  
directivity shift of the first signal is greater, the  
15 directivity controller broadens the width of directivity  
and changes the directivity orientation, adjusts the  
directivity and then returns the width of directivity  
to the original value, and if the determiner determines  
that the directivity shift of said first signal is  
20 smaller, does not change the width of directivity but  
changes the directivity orientation.

12. A mobile station apparatus comprising:

first measuring means for measuring the reception  
25 power of a first signal transmitted from the base station  
apparatus according to claim 1 to said mobile station;  
second measuring means for measuring the reception  
power of a second signal transmitted from the base

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station apparatus to other than said mobile station; and  
uplink transmitter for transmitting the  
measurement results of said first and second measuring  
means to the base station apparatus.

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13. The mobile station apparatus according to claim 12 comprising reception power calculating means for calculating a reception power ratio which is a ratio of the reception power of the first signal to the reception power of the second signal, wherein the uplink transmitter transmits said reception power ratio.

14. The mobile station apparatus according to claim 12,  
wherein the reception power calculating means uses a  
15 common signal applicable to any mobile station  
apparatuses as the second signal.

15. A radio communication method, wherein a base station apparatus transmits a first signal to a specific mobile station apparatus, at the same time transmits a second signal to another apparatus other than said mobile station apparatus with directivity different from that of said first signal, said mobile station apparatus measures the reception power of said first signal and said second signal and transmits the measurement results to the base station apparatus, said base station apparatus measures a transmission power ratio which is a ratio of the transmission power of said fist signal

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to the transmission power of said second signal, measures a reception power ratio which is a ratio of the reception power of said first signal to the reception power of said second signal, determines whether the directivity of said first signal should be changed or not based on the difference between said transmission power ratio and said reception power ratio and changes the directivity of said first signal based on the determination result.

10 16. The radio communication method according to claim 15, wherein the mobile station apparatus that received the first signal calculates a reception power ratio and transmits it to the base station apparatus.

15 17. The radio communication method according to claim 16, wherein, if the difference between the transmission power ratio and reception power ratio is greater than a predetermined first threshold, the base station apparatus changes the directivity of the first signal.

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18. The radio communication method according to claim 16, wherein, if the difference between the reception power ratio and transmission power ratio is greater than a predetermined first threshold and at the same time the mobile station apparatus that received the first signal requests the transmission power to be increased, the base station apparatus changes the directivity of said first signal.

19. The radio communication method according to claim  
16, wherein, if the difference between the reception  
power ratio and transmission power ratio is greater than  
5 a predetermined first threshold and at the same time the  
reception power of a signal transmitted from the mobile  
station apparatus that received the first signal is  
smaller than a predetermined second threshold, the base  
station apparatus changes the directivity of said first  
10 signal.

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